

REMARKS

Regarding the Office Action:

Claims 1 – 37 are pending, with claims 1 – 17 withdrawn from consideration as drawn to a nonelected invention. The Examiner rejected claims 18 – 21, 23, 25 – 28, 30, and 32 – 34 under 35 U.S.C. § 103(a) as unpatentable over Nishimura, et al. (U.S. Patent No. 6,332,835) in view of Hattori, et al. (EP 1 123 956 A1) and Hudson (U.S. Patent No. 6,407,000); and indicated allowable subject matter in claims 22, 24, 29, 31, and 35 – 37, which were objected to as being dependent upon a rejected base claim, but deemed allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants appreciate the Examiner's thorough examination of this application, especially the detailed citations which aided Applicants in reviewing the Examiner's comments. Nevertheless, Applicants respectfully traverse the rejection, as detailed above, for the following reasons.

Regarding the Rejection of Claims 18 – 21, 23, 25 – 28, 30, and 32 – 34 under 35

U.S.C. § 103(a):

Applicants respectfully traverse the rejection of claims 18 – 21, 23, 25 – 28, 30, and 32 – 34 under 35 U.S.C. § 103(a) as unpatentable over Nishimura in view of Hattori and Hudson. Applicants respectfully disagree with the Examiner's arguments and conclusions, and respectfully submit that a *prima facie* case of obviousness has not been established.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a

reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *See* M.P.E.P. § 2143.

The Examiner does not show that all the elements of Applicants' claims are met in the cited references, does not show that there is any suggestion or motivation to modify the cited references to result in the claimed invention, and does not show there would be any reasonable expectation of success from so doing.

Prior Art Reference(s) Must Teach or Suggest All the Claim Elements

To begin, Applicants respectfully point out to the Examiner that it "is *impermissible* within the framework of section 103 *to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary* to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *See In re Wesslau*, 147 U.S.P.Q. 391 (C.C.P.A. 1965), emphasis added. *See also* M.P.E.P. § 2141.02. Applicants dispute the Examiner's contention that those references teach or suggest each and every element of Applicants' claimed invention. Applicants submit that, for the reasons detailed below, the Examiner is only using so much of the cited references to support his position, to the exclusion of other parts necessary to give a full appreciation of what the references fairly suggest to one of ordinary skill in the art.

Nishimura, taken alone or in combination with Hattori and Hudson, does not teach or suggest at least the elements of Applicants' independent claims 18 and 23. In contrast to the present invention, Nishimura teaches silica particles having a primary particle diameter between about 1 and 300 nm and a secondary particle diameter between about 3 and 1,000 nm. *See* Nishimura, col. 8, lines 11 – 16. Furthermore, Hattori teaches that abrasives normally exist as aggregates (secondary particles) composed of small particles (primary particles). The mean size

of the secondary particles of the abrasive is preferably 0.005 to 3 μm (5 to 3,000 nm). More preferably, Hattori's mean particle size is 0.01 to 1.0 μm (10 to 1,000 nm), and even more preferably, 0.02 to 0.7 μm (20 to 700 nm). *See* Hattori, paragraph [0022].

However, Applicants point out that in both Nishimura and Hattori, the secondary particles are aggregates of primary particles, and the primary particles and secondary particles of the references do not correspond to Applicants' claimed "first colloidal silica particles whose primary particles have a diameter ranging from 5 to 20 nm, and second colloidal silica particles whose primary particles have a diameter ranging from 20 nm to 50 nm, wherein the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles" (independent claims 18 and 23).

Moreover, Hudson, while utilizing a bimodal particle approach (*See* Hudson, Abstract), still does not teach or suggest at least the elements of Applicants' independent claims 18 and 23 when taken alone or in combination with Nishimura and Hattori. Hudson also differs from Applicants' claimed invention, in part because Hudson's first abrasive particles included in the bimodal slurry have a diameter from 0.010 to 0.050 μm (10 to 50 nm), and Hudson's second abrasive particles included in the bimodal slurry have a *diameter ranging from 70 to 400 nm*. *See* Hudson, col. 6, line 5 ("approximately 0.070-0.40 μm "). This contrasts with Applicants' claimed invention, wherein claims 18 and 23 recite, in part, "second colloidal silica particles whose primary particles have a *diameter ranging from 20 nm to 50 nm*" (claims 18 and 23, italics added).

While the Examiner admitted some of Nishimura's deficiencies, such as, "Nishimura et al. do not teach that the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles" (Office Action,

p. 3), the application of Hattori and Hudson in combination with Nishimura still does not cure Nishimura's deficiencies.

Applicants therefore submit that Nishimura, Hattori, and Hudson, taken individually or in combination, do not teach or suggest at least Applicants' claimed "a slurry for chemical mechanical polishing, which contains polishing particles comprising first colloidal silica particles whose primary particles have a diameter ranging from 5 to 20 nm, and second colloidal silica particles whose primary particles have a diameter ranging from 20 nm to 50 nm" (independent claims 18 and 23).

Thus, contrary to the Examiner's allegation, it would NOT "have been obvious ... to optimize the slurry composition of Nishimura et al. in considerations of avoiding dishing and better polishing performance, as suggested by Hattori and Hudson" (Office Action, p. 4). Even if Hudson's slurry was employed in Nishimura or Hattori's inventions, this still would not produce Applicants' claimed invention.

This conclusively demonstrates just some of the differences between Nishimura, Hattori, and Hudson, and Applicants' present claimed invention. The Examiner has therefore not met at least one of the essential criteria for establishing a *prima facie* case of obviousness, wherein "the prior art reference (or references when combined) must teach or suggest all the claim limitations." See M.P.E.P. §§ 2142, 2143, and 2143.03.

Lack of Suggestion or Motivation to Modify or Combine Reference Teachings for Prima Facie Obviousness and Lack of Reasonable Expectation of Success for Prima Facie Obviousness

The M.P.E.P. sets forth:

"However, "The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. *The prior art must provide a*

motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device." Ex parte Chicago Rawhide Mfg. Co., 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984)." M.P.E.P. § 2144.04, italics added.

As such, the present invention, as recited in independent claims 18 and 23, cannot be attained based merely on Nishimura, or on a combination of Nishimura with Hattori and Hudson. One skilled in the art would only arrive at the present claimed invention by consulting Applicants' disclosure. Therefore, the only way to construct the claimed invention from the cited references would be to rely on aspects related to the present invention. Such reliance, however, would constitute improper hindsight reasoning. Nishimura's use of silica particles does not lend itself to combination with Hattori's aggregates and Hudson's bimodal slurry approach. This is, in part, because Nishimura and Hattori's secondary particles are aggregates of primary particles, and this differs from Hudson. Hudson, on the other hand, aims to improve stability of particles in the CMP solution by either utilizing a bimodal slurry or a mono-modal slurry to rapidly planarize a surface. Hudson does not even address the problems of dishing or selective removal rates for interconnect, barrier, or dielectric materials. *See* Hudson, col. 3, lines 25 – 40 and lines 45 – 57. Applicants submit that these references, while all trying to improve CMP, actually diverge from each other in aim and scope, and therefore also teach away from the present invention, for the reasons already presented.

First, Applicants have already demonstrated that a worker in the art cannot rearrange parts of Nishimura, Hattori, and Hudson, to produce Applicants' claimed invention. Second, Applicants have also demonstrated that the cited references teach away from the present invention, and therefore they cannot provide any motivation or reason for one of ordinary skill in the art to modify the references, or combine them, to produce the present claimed invention.

Third, Applicants note that one of ordinary skill in the art must have this motivation or reason *without the benefit of Applicants' specification* to modify the references.

As already demonstrated, such combination of these references *a priori* fails to establish obviousness of the claimed invention. Furthermore, Applicants have pointed out deficiencies in the cited prior art that render nugatory any indication that the cited references would give motivation or reason to one of ordinary skill in the art to modify them *without the benefits of Applicants' specification*.

Therefore, Applicants submit that Nishimura, taken alone or in combination with Hattori and Hudson, does not suggest the desirability of any modification to result in Applicants' claimed invention.

In addition, regarding the required reasonable expectation of success, as evidenced from previous arguments above, Applicants submit that there would be no reasonable expectation of success to be derived from modifying Nishimura with either or both of Hattori and Hudson, as this would diverge from Applicants' claimed

“a slurry for chemical mechanical polishing, which contains polishing particles comprising first colloidal silica particles whose primary particles have a diameter ranging from 5 to 20 nm, and second colloidal silica particles whose primary particles have a diameter ranging from 20 nm to 50 nm, wherein the weight ratio of the first colloidal silica particles is in the range of 0.6 to 0.9 based on a total weight of said first and second colloidal silica particles” (claims 18 and 23).

This also demonstrates that the Examiner's reliance on Nishimura, Hattori, and Hudson is not sufficient to establish *prima facie* obviousness.

Since Applicants have already demonstrated: (1) deficiencies in the cited references, (2) that they are not combinable to produce the present claimed invention, (3) that they teach away

from the present invention, and (4) that they do not provide any suggestion or motivation to produce the present claimed invention, it logically flows that there would be no reasonable expectation of success expected by one of ordinary skill in the art when combining Nishimura, Hattori, and Hudson.

In summary, the Examiner has not met any of the essential criteria for establishing a *prima facie* case of obviousness. Applicants have demonstrated above that the Examiner: (a) has not shown all elements of Applicants' claimed invention are taught or suggested by Nishimura, Hattori, and Hudson; (b) has not shown any requisite suggestion or motivation to modify Nishimura, Hattori, and Hudson to produce Applicants' claimed invention; and (c) has not shown there would be any reasonable expectation of success from modifying Nishimura, Hattori, and Hudson in order to produce the present claimed invention. Thus, Applicants submit that the Examiner's reliance on these references fails to establish *prima facie* obviousness.

Finally, Applicants note that the M.P.E.P. sets forth that "[i]f an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious." M.P.E.P. § 2143.03.

Therefore, Applicants submit that independent claims 18 and 23 are allowable, for the reasons argued above. In addition, dependent claims 19 – 22 and 24 – 37 are also allowable at least by virtue of their respective dependencies from allowable base claims 18 and 23. Therefore, Applicants respectfully submit that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection.

Conclusion:

In view of the foregoing, Applicants request reconsideration of the application and submit that the rejections detailed above should be withdrawn. This Request for Reconsideration

should allow for immediate and favorable action by the Examiner. Applicants submit that the pending claims are in condition for allowance, and request a favorable action.


Should the Examiner continue to dispute the patentability of the claims after consideration of this Request, Applicants encourage the Examiner to contact Applicants' undersigned representative by telephone to discuss any remaining issues or to resolve any misunderstandings. Applicants' undersigned representative would welcome the opportunity to discuss the merits of the present invention with the Examiner if telephone communication will aid in advancing prosecution of the present application.

Please grant any extensions of time under 37 C.F.R. § 1.136 required in entering this response. If there are any fees due under 37 C.F.R. § 1.16 or 1.17, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our deposit account 06-0916.

Respectfully submitted,

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